

I CLAIM:

- 1 1. A vehicle collision avoidance system comprising:
2 a rotating pulsed infrared laser beam scanner apparatus for
3 generating a first signal representative of an obstacle;
4 a processing circuit coupled to the rotating pulsed infrared laser
5 beam scanner apparatus for processing the first signal and generating a plurality
6 of signals;
7 a processor coupled to the processing circuit for processing the
8 plurality of signals and generating a braking signal; and
9 a braking apparatus responsive to the braking signal.
- 1 2. The vehicle collision avoidance system of claim 1, wherein the
2 rotating pulsed infrared laser beam scanner apparatus rotates in a horizontal
3 plane and a vertical plan simultaneously.
- 1 3. The vehicle collision avoidance system of claim 2, wherein the
2 rotating pulsed infrared laser beam scanner apparatus rotates in the horizontal
3 plane at 48 revolutions per second and with a period of 20.83ms and in the
4 vertical plane at 8 sectors per second and a period of 20.83ms.
- 1 4. The vehicle collision avoidance system of claim 2, wherein the
2 rotating pulsed infrared laser beam scanner apparatus is operable to scan an
3 object from 1.6m to 120m.
- 1 5. The vehicle collision avoidance system of claim 1, wherein the
2 rotating pulsed infrared laser beam scanner apparatus emits a laser beam having
3 28.45W peak power, a wavelength between 1um and 1.550 um excluding the
4 region between 1.3um to 1.4um, a 1.0ns pulse width, and a 10Mhz to 110Mhz
5 repetition rate.

1 6. The vehicle collision avoidance system of claim 1, wherein the
2 rotating pulsed infrared laser beam scanner apparatus has a minimum peak
3 power value of about .104W and a reserved peak power of about 28.45W.

1 7. A method of avoiding a vehicle collision comprising:
2 determining features of an obstacle using a rotating pulsed infrared
3 laser beam scanner apparatus;
4 processing signals representative of the determined features; and
5 braking the vehicle in the event the processed signals indicate an
6 imminent collision.

1 8. The method of avoiding a vehicle collision of claim 7, wherein the
2 rotating pulsed infrared laser beam scanner apparatus rotates in a horizontal
3 plane and in a vertical plane simultaneously.

1 9. The method of avoiding a vehicle collision of claim 7, wherein the
2 rotating pulsed infrared laser beam scanner apparatus emits a laser beam having
3 a wavelength between 1um and 1.550 um excluding the region between 1.3um
4 to 1.4um, a 1.0ns pulse width, and 10Mhz to 110Mhz repetition rate.

1 10. The method of avoiding a vehicle collision of claim 7, wherein the
2 rotating pulsed infrared laser beam scanner apparatus has a minimum peak
3 power value of about .1W and a reserved peak power of about 28.45W.

1 11. A method of avoiding a vehicle collision comprising:
2 detecting circumferential obstacles as bodies;
3 obtaining data from a rotating pulsed infrared laser beam scanner
4 apparatus including a time when the beam reaches a first edge of the obstacle
5 and a time when the beam reaches a second edge of the obstacle;
6 determining a relative distance from the scanner apparatus to the
7 obstacle; and

8

determining a time to collision with the obstacle.